

What is claimed is:

1. An isolated nucleic acid molecule having the sequence of SEQ ID NO:1, said nucleic acid molecule encoding a human PD2 protein about 531 amino acids in length, said encoded human PD2 protein comprising an amino terminal helix-loop-helix domain and a centrally localized nuclear transport signal and nucleotide binding site.

2. The nucleic acid molecule of claim 1, which is DNA.

3. The DNA molecule of claim 2, which is a cDNA comprising a sequence approximately 1.9 kilobase pairs in length that encodes said human PD2 protein.

4. The DNA molecule of claim 2, which is a gene comprising introns and exons, the exons of said gene specifically hybridizing with the nucleic acid of SEQ ID NO:1, and said exons encoding said human PD2 protein.

5. An isolated RNA molecule transcribed from the nucleic acid of claim 1.

6. A polynucleotide which comprises:
a) a sequence encoding a protein or polypeptide as defined in claim 1 or the complement of said sequence;

b) a sequence of nucleotides shown in Figure 2;

c) a sequence capable of selectively hybridizing to a sequence in either a) or b); and

d) a fragment of any of the sequences in a),
b) or c).

7. The nucleic acid molecule of claim 6,
5 wherein said nucleic acid molecule encodes a human PD2
protein comprising an amino acid sequence selected
from the group consisting of an amino acid sequence
having SEQ ID NO:2 and amino acid sequences encoded by
natural allelic variants of said open reading frame.

10 8. The nucleic acid molecule of claim 7,
which comprises SEQ ID NO:1.

15 9. An isolated nucleic acid molecule
comprising a sequence selected from the group
consisting of:

a) SEQ ID NO:1;
b) a sequence which specifically
hybridizes with SEQ ID NO:1; and
20 c) a sequence encoding a polypeptide of
SEQ ID NO:2.

25 10. An oligonucleotide between about 10 and
about 200 nucleotides in length, which specifically
hybridizes with a protein translation initiation site
in a nucleotide sequence encoding amino acids of SEQ
ID NO:2.

30 11. An isolated human PD2 protein, about
531 amino acids in length, said human PD2 protein
comprising an amino terminal helix-loop-helix domain
and a centrally localized nuclear transport signal and

nucleotide binding site.

12. An antibody immunologically specific for the isolated protein of claim 11.

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13. An antibody as claimed in claim 12, said antibody being monoclonal.

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14. An antibody as claimed in claim 12, said antibody being polyclonal.

15. A plasmid comprising SEQ ID NO: 1.

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16. A vector comprising SEQ ID NO: 1.

17. A retroviral vector comprising SEQ ID NO: 1.

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18. A host cell comprising a nucleic acid molecule having the sequence of SEQ ID NO:1.

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19. A host cell as claimed in claim 18, wherein said host cell is selected from the group consisting of bacterial, fungal, mammalian, insect and plant cells.

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20. A host cell as claimed in claim 15, wherein said nucleic acid is provided in a plasmid and is operably linked to mammalian regulatory elements in reverse, antisense orientation.

21. A host animal comprising SEQ ID NO: 1.

22. A host animal as claimed in claim 21,
wherein said animal harbors a homozygous null mutation
in its endogenous PD2 gene wherein said mutation has
been introduced into said mouse or an ancestor of said
5 mouse via homologous recombination in embryonic stem
cells, and further wherein said mouse does not express
a functional mouse PD2 protein.

23. The transgenic mouse of claim 22,
10 wherein said mouse is fertile and transmits said null
mutation to its offspring.

24. The transgenic mouse of claim 22,
wherein said null mutation has been introduced into an
15 ancestor of said mouse at an embryonic stage following
microinjection of embryonic stem cells into a mouse
blastocyt.

25. A method for screening a test compound
20 for PD2 modulating activity, comprising:

a) providing a host cell expressing a PD2-
encoding nucleic acid;

b) contacting said host cell with a
compound suspected of modulating PD2 activity; and

25 c) determining the PD2 modulating activity
as assessed by an alteration in the phosphorylation
status of PD2.

26. A method as claimed in claim 25,
30 wherein said host cells are assessed for altered
expression of pancreatic differentiation markers
selected from the group consisting of MUC-1 and
carbonic anhydrase.

27. A method as claimed in claim 25,
wherein said PD2 modulating activity is correlated
with alterations in cellular morphology.

5 28. A kit for detecting the presence of PD2
encoding nucleic acids in a sample, comprising:

a) oligonucleotide primers specific
for amplification of PD2 encoding nucleic acids;

b) polymerase enzyme;

10 c) amplification buffer; and

d) PD2 specific DNA for use as a
positive control.